## REMARKS

Claims 1 through 8 are pending. Claims 9 through 13 are added. Claims 1 and 5 are amended.

Claim Rejections under 35 U.S.C. 103(a)

The Office Action rejected claims 1 – 8 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,859,430 to Frank et al. (the Frank reference) in view of U.S. Patent No. 6,359,859 to Brolin et al. (the Brolin reference) and U.S. Patent No. 5,822,299 to Goodman (the Goodman reference). However, the Office Action has failed to provide a prima facie case of obviousness over the cited references for the following reasons.

As stated in paragraph 7 of this application, Payload Defect Indicator - Path (PDI-P) coding from the GR-253-CORE standard is utilized in many SONET add/drop multiplexers. PDI-P coding was developed and standardized in order to provide path-level facility protection in unidirectional, path-switched rings (UPSR). ***However, it has not been used for equipment protection. Embodiments of the present invention take advantage of PDI-P coding to provide equipment protection for the switch fabrics.*** As seen in Figure 1 of the application below, the SONET add/drop multiplexers are the client input/output interfaces for the switch fabrics. The SONET add/drop multiplexers and the switch fabrics form the cross-connect system. The working and protection switch fabrics monitor for equipment failures and generate Standardized PDI-P coding to transmit to the SONET add/drop multiplexer. The SONET add/drop multiplexers may then select between the signals from the working and protection switch fabrics based on the PDI-P coding.

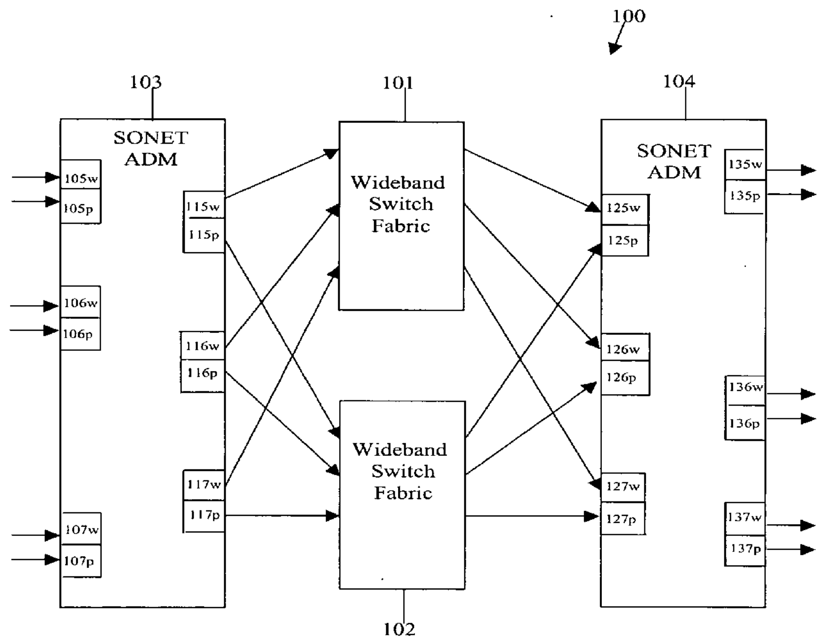


**FIG. 1**

Current solutions require custom-designed hardware and software to implement protection methods for the switching fabrics.

<u>Independent Claim 1 and dependent claims 2 through 4</u>

The combination of the Frank reference, Brolin reference and the Goodman reference fail to teach or suggest the embodiment of the cross-connect system in claim 1. Each of the references merely describes using path-level facility protection in UPSR networks. First, with respect to the Frank reference, the Office Action cites column 6, lines 49 through 65 of the Frank reference as disclosing a working path corresponding with a switch fabric. This citation states:

> "FIG. 3 is a block diagram of an access interface module, indicated generally at 300, and constructed according to the teachings of the present invention. Access interface module 300 is used, for example, in a network element in a ring network of the type shown and described with respect to FIG. 1, above. Among other functions, access interface module 300 determines when to switch from a working route to a protection route for a particular virtual connection when error cells are detected on the working route for the virtual connection. Access interface module

> 300 includes first and second switch fabrics, 304 and 306, respectively. Switch fabrics 304 and 306 are coupled to ring interface modules that are associated with different routes of a ring network. Thus, first switch fabric 304 receives and transmits cells on a first route of the ring network and second switch fabric 306 receives and transmits cells on a second route of the ring network."

This citation from the Frank reference only describes an access interface module 300 that performs path-level facility protection from a working route to a protection route for a particular virtual connection. As stated in the Frank reference at column 7, lines 44 through 58:

> "When an error cell is detected on a working route for a virtual connection, the switch fabric for the working route interrupts microprocessor 308. Microprocessor 308 reads the status table in the switch fabric to determine the virtual connection that received the error cell. In one embodiment, microprocessor 308 reads the status table one byte at a time with each bit in the byte corresponding to a state of a designated virtual connection of the ring network. For example, the status table of the switch fabric contains one bit per virtual connection. Initially, all bits are set to "0," indicating that no errors have been detected on the route for the virtual connection. When an error is detected, the bit corresponding to the virtual connection is set to "0," and this bit is set back to "0" when a valid user data cell--as opposed to an error cell--is received for that virtual connection."

Since the Frank reference merely describes path level protection, the Frank reference fails to teach or suggest the requirements, *inter alia*, of claim 1 of a working WideBand switch fabric coupled to said at least one SONET add/drop multiplexer, said working switch fabric receiving a working signal from a first interface on said at least one SONET add/drop multiplexer, said working signal and working payload, said working switch fabric switching said working signal so as to generate a working switched signal and to generate a working Payload Defect Indicator - Path code in response to monitoring for equipment failures and working switched payload, and providing said working switched signal to a second port on said at least one SONET add/drop multiplexer; and a protect WideBand switch fabric coupled to said at least one SONET add/drop

multiplexer, said protect switch fabric receiving a protect signal from a third interface on said at least one SONET add/drop multiplexer, said protect signal and protect payload, said protect switch fabric switching said protect signal so as to generate a protect switched signal and to generate a protect Payload Defect Indicator - Path code in response to monitoring for equipment <u>failures</u> and protect switched payload, and providing said protect switched signal to a fourth port on said at least one SONET add/drop multiplexer.

Similarly to the Frank reference, the Brolin reference merely describes path-level facility protection in unidirectional, path-switched rings (UPSR). The Brolin reference states at column 13, lines 36 through 49:

> "Further during operation of the line unit 100 as shown in FIG. 7, the switch fabric ASIC 114 performs Unidirectional Path Switched Ring (UPSR) path selection, responsive to path performance information ***provided by the signal routing ASIC 102***, and passed to the switch fabric ASIC 114 within some number of over-written overhead bytes, in order to determine which of the connections 130 or 132 should be the path for individual STS or VT signals that are dropped at the service side of the device. The switch fabric ASIC 114 performs this selection in response to path performance criteria, in order to determine the path of highest quality from the two available paths. The switch fabric ASIC 114 performs this selection at either the STS-1 or VT 1.5 level for each path dropped -to the service side of the device (emphasis added)."

As described above, the Brolin reference states that the switch fabric ASIC 114 performs Unidirectional Path Switched Ring (UPSR) path selection, responsive to *path performance information provided by the signal routing ASIC 102, and passed to the switch fabric ASIC 114* within some number of over-written overhead bytes. Thus, the Brolin reference merely describes path-level facility protection in unidirectional, path-switched rings (UPSR).

Similary to the Frank reference and the Brolin reference, the Goodman reference merely describes path-level facility protection in unidirectional, path-switched rings (UPSR). As stated in the Goodman reference at column 1, lines 9 through 13:

> "Telecommunication systems or networks employing synchronous, e.g. SDH or SONET transport techniques are usually provided with path redundancy or path protection of traffic transported across the network to signal processing equipment such as system nodes or cross connects. Path protection is a specific requirement of network operators to reduce the risk of outage and thus ensure an uninterrupted high quality service to customers."

As stated in this citation, the Goodman reference merely describes the use of SDH or SONET to provide path redundancy or path protection.

Furthermore, the combination of the Frank reference and the Brolin reference and the Goodman reference fail to suggest the requirements of the claims. As shown above, each of the references merely describes using path-level facility protection in unidirectional, path-switched rings (UPSR). Even the Office Action states on page 4 that, "The motivation for using the SONET add/drop multiplexer that supports UPSR is to improve the reliability of the system by using two redundant paths in the ring network." And the Office Action on page 5 even states that the motivation in the Goodman reference for using PDI-P codes is to select the proper protection path. Thus, as admitted by the Office Action, the only motivation in the prior art is the use of UPSR for path-level facility protection in a ring network. None of the references teach or suggest use of standardized SONET PDI-P coding to provide equipment protection for the switch fabrics. As such, the combination of the Frank reference and the Brolin reference and the Goodman reference fail to teach or suggest the requirements of claim 1. Claims 2 through 4 add further patentable matter to claim 1 and thus are also patentable over the cited references for the reasons herein.

<u>Independent Claim 5 and Dependent Claims 6 through 8</u>

The combination of the Frank reference and the Brolin reference and the Goodman reference fail to suggest the requirements of the claim 5. As explained above with respect to claim 1, each of the references merely describes using path-level facility protection in unidirectional, path-switched rings (UPSR). Even the Office Action states on page 4 that, "The motivation for using the SONET add/drop multiplexer that supports UPSR is to improve the reliability of the system by using two redundant paths in the ring network." Thus, as admitted by

the Office Aciton, the only motivation in the prior art is the use of UPSR for path-level facility protection in a ring network. None of the references teach or suggest use of standardized SONET PDI-P coding to provide equipment protection for the switch fabrics. As such, the combination of the Frank reference and the Brolin reference and the Goodman reference fail to teach or suggest the requirements of claim 5. Claims 6 through 8 add further patentable matter to claim 5 and thus are also patentable over the cited references for the reasons herein.

Independent Claim 12 and Dependent Claim 13

For similar reasons as stated above with respect to claims 5 and 12, the combination of the Frank reference and the Brolin reference and the Goodman reference fail to suggest the requirements of claim 12 and 13.

## CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 240-5324.

Respectfully submitted,
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